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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/590,004	08/21/2006	Tetsunori Higuchi	TIP-06-1220	7080

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IP GROUP OF DLA PIPER US LLP  
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EXAMINER
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LEUNG, WAYNE K

ART UNIT	PAPER NUMBER
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4171

MAIL DATE	DELIVERY MODE
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07/28/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/590,004	<b>Applicant(s)</b> HIGUCHI ET AL.	
	<b>Examiner</b> Wayne K. Leung	<b>Art Unit</b> 4171	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
4a) Of the above claim(s) 14-17 and 21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 18-20 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/21/2006, 11/03/2006</u> . | 6) <input type="checkbox"/> Other: ____.  |

## DETAILED ACTION

### *Election/Restrictions*

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group 1, claim(s) 1-13, 18-20, and 22, drawn to a flame resistant polymer being denatured in an organic solvent.

Group 2, claim(s) 14-17, and 21, drawn to a carbon molded product, which is obtained by carbonizing a polymer having been denatured by an amine.

2. The inventions listed as Groups 1 and 2 do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: The special technical feature that unifies the two groups is the flame-resistant polymer. This polymer is well known in the prior art (Ono et al., US patent 3,900,285).

3. During a telephone conversation with Piper Rudnick LLP on 07/07/2008 a provisional election was made without traverse to prosecute the invention of Group 1, claims 1-13, 18-20, and 22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 14-17 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim

remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Objections***

5. Claims 18-20 and 22 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. The claims do not properly depend upon claim 3, as there is no active step of forming the solution.

### ***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-3, 7, 11-13, 18-20, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Ono et al. (US patent 3,900,285).

8. Regarding claims 1 and 3, Ono et al. discloses a process for treating an acrylic fiber dissolved in dimethylformamide with hydroxylamine. This corresponds to instant claim 1, where the flame-resistant polymer is being denatured with an amine compound, and instant claim 3, where the flame-resistant polymer-containing solution contains a flame-resistant polymer and a polar organic solvent [Col. 1, lines 47-53].

9. Regarding claims 2 and 7, Ono et al. teaches that the acrylic fiber is composed of at least 85 percent by weight of acrylonitrile [Col. 1, lines 61-65].

10. Regarding claims 11-13, Ono et al. discloses that fiber products may be made from the fibers, including tows, yarns, and slivers, corresponding to claim 11 and the fibrous product of claim 12. Ono et al. also discloses that woven fabrics, non-woven fabrics, and papers may be made, corresponding to the sheet fabric of claim 13 [Col 4, lines 46-55]. As the fibers of example 2 are 2 deniers in thickness, papers manufactured from this process could also be 2 deniers in thickness, which correspond to the thickness limitation of claim 13.

11. Regarding claim 18, Ono et al. teaches that the acrylic fiber is heated in a gaseous atmosphere to provide a fireproof product [Col. 4, lines 25-27]. Furthermore, as DMF has a vapor pressure of 3.7 at 25°C, removal of the solvent occurs naturally at room temperature.

12. Regarding claims 19 and 20, Ono et al. discloses that fiber products may be made from the fibers, including tows, yarns, and slivers, corresponding to claim 11 and the fibrous product of claim 12. Ono et al. also discloses that woven fabrics, non-woven fabrics, and papers may be made, corresponding to the sheet fabric of claim 13 [Col 4, lines 46-55]. Although the prior art is silent on whether the product may be formed as a solution, since the removal of the solvent from the solution does not hinder product formation, the solvent is not a necessary element to the invention, and the same product is formed without the solvent. *Ex parte Wu* , 10 USPQ 2031 (Bd. Pat. App. & Inter. 1989).

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13. Regarding claim 22, Ono et al. teaches that products may be carbonized, for example, by heating in an inert gaseous atmosphere at temperatures of 300°C to 1,000°C [Col. 4, lines 59-62].

14. Claim 1-7, 9, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Chiang et al. ("Studies of reactions with Polymers. VI. The Modification of PAN with Primary Amines")

15. Regarding claims 1-3, 6, and 7, Chiang et al. discloses a polyacrylonitrile polymer that is dissolved in DMSO and denatured with an amine [pages 1623-4].

16. Regarding claim 4, since the applicant's solution is not consisting only of a polymer and a polar organic solvent, the examiner takes the position that the solution comprises of a polymer and a polar organic solvent, but may include other solvents, such as DMSO. **See MPEP 2111.03.** The polymer must then be dissolved in the amine solvent before it is reacted.

17. Regarding claim 5, Chiang et al. discloses that ethylenediamine was used as one of the amines in the experiments [page 1623].

18. Regarding claims 9 and 10, the methods are disclosed in the experiments described [page 1624].

***Claim Rejections - 35 USC § 102/103***

19. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 and 35 U.S.C. 103 that form the basis for the rejections under this section made in this

Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. Claim 8 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ono et al. (US patent 3,900,285).

21. The disclosure of Ono et al. is adequately set forth in paragraph 7 and is incorporated herein by reference. Ono et al. further teaches that the acrylic fiber has a solubility of not more than 50 percent in DMF at 90°C, which is within the range disclosed in the instant claim. However, Ono et al. are silent about the weights of the solid component remaining in heating the flame-resistant polymer-containing solution in nitrogen at a rate of 50°C/minute up to 300°C. In view of the solutions being substantially identical, the composite disclosed in the prior art would possess the claimed concentration by weight. Since the PTO does not have proper means to conduct experiments, the burden of proof is now shifted to applicants to show otherwise. **In re Best**, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977); **In re Fitzgerald**, 205 USPQ 594 (CCPA 1980).

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne K. Leung whose telephone number is (571)270-5460. The examiner can normally be reached on M-Th 8:30-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. Lawrence Tarazano/  
Supervisory Patent Examiner, Art Unit 4171

Wayne K Leung  
Examiner  
Art Unit 4171

wkl